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KNOXVILLE 37916
DEPARTMENT OF PHYSICS AND ASTRONOMY

September 16, 1968

Robert A. Kehoe, M.D.
University of Cincinnati
The Kettering Laboratory
College of Medicine
Eden Avenue
Cincinnati, Ohio 45219

Dear Doctor Kehoe:

Thank you for your letter of September 6, 1968. I hope you will soon have time to examine at least the first few paragraphs of the revised paper I sent you because it describes in more detail the method of collection of the samples of diets and excreta from your men and I want to be sure it is correct. The referee felt that the first version was too terse.

The information that we are obtaining from your unique material is forming the basis for values for the daily intake and excretion of "Standard Man". It is wonderful that we have the opportunity to analyze daily diets and excreta of individuals over such a long period. More and more I realize how fortunate we are in having you and your group make this material available to us. As a physicist and a member of the ICRP task group on Standard Man I feel that my job is to make as careful and accurate analyses as possible and to report what we find as clearly as I can. Although I do take the responsibility for the statistical treatment of the data, the interpretation of the biological significance of our results I must leave to those of you who have training in the field.

As I see it, part of the difference between you and Harry Schroeder arises from the fact that you are talking about two different things. Your interpretation is based for the most part on analysis of body fluids from living individuals under carefully controlled conditions and his on the analysis of the actual tissues themselves of random individuals who may be considered as representing a sample, however small, of the ordinary population. Each of you makes a logical interpretation of the data before you, and I do not see that the data are incompatible. It is difficult to assess body burden on the basis of blood and urine levels and, of course, impossible to estimate rate of exposure from analysis of tissues from cadavers.

It seems to me, however, that the important difference between you is the same as that between Robley D. Evans and Karl Z. Morgan on the subject of ionizing radiation. That is, you and Dr. Evans state that there is a threshold below which the accumulation of lead (or ionizing radiation) is "harmless" and Harry Schroeder and Karl Morgan believe that, although the body can tolerate and adjust to lower levels of exposure, the long range effects are

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not negligible and so one cannot say that the low-level exposure is "harmless". In the case of ionizing radiation I feel that the evidence for the latter position is stronger than that for the former, and I am inclined to feel that way about trace metals as well. As you know, good solid information on long-range effects of anything is difficult to come by, and even more difficult to interpret. One can hope that the heat and light generated by free discussion of these differences in philosophy will continue to stimulate research in the field for a long time so that the picture will become clearer as time goes on.

Again I thank you for your long letter. Do you mind if I send a copy to Harry Schroeder? I wish we could all get together for a face-to-face discussion some time.

I shall look forward to having your comments on the paper we sent you.

With kindest regards,

Sincerely,

Isabel H. Tipton

Isabel H. Tipton, Ph.D.
Professor of Physics

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